

Appl. No. : 10/075,668
Filed : February 13, 2002

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) An apparatus for connecting a longitudinal member with a bone portion, comprising:

[a longitudinal member connectable with a bone portion;]

a fastener having a longitudinal axis and engageable with the bone portion to connect said longitudinal member to the bone portion;

a housing having a first passage configured to receive said longitudinal member, said housing having a second passage with a longitudinal axis extending transverse to said first passage, said fastener extending through an opening in said housing into said second passage and being movable relative to said housing, said longitudinal axis of said fastener being positionable in any one of a plurality of desired angular positions relative to said longitudinal axis of said second passage, the second passage having a horizontal indentation;

a spacer received in said second passage of said housing and engageable with said fastener and said longitudinal member and having a radial surface below said indentation; and

a member engaging both the horizontal indentation in the second passage and the radial surface of the spacer that applies an axial force to the spacer to preventing relative movement between said fastener and said housing and holding said longitudinal axis of said fastener in any one of said plurality of desired angular positions relative to said longitudinal axis of said second passage when said longitudinal member is disengaged from said spacer and said spacer engages said fastener, said fastener and said housing being manually movable relative to each other against said force when said longitudinal member is disengaged from said spacer and said member applies said force. [;

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a clamping mechanism that clamps said longitudinal member, said spacer and said housing to said fastener to prevent movement of said fastener relative to said housing.]

2. (Previously presented) An apparatus as defined in claim 1 wherein said member is an axially compressible member is an axial compressible member.

3. (Original) An apparatus as defined in claim 1 wherein said member is a spring member engaging said housing and said spacer.

4. (Original) An apparatus as defined in claim 3 wherein said member includes a ring member extending into a groove in said spacer and a groove in said housing.

5. (Original) An apparatus as defined in claim 4 wherein said ring member has a gap to permit radial contraction and radial expansion of said ring member.

6. (Canceled)

7. (Original) An apparatus as defined in claim 4 wherein said ring member is arched when said ring member is disengaged from said housing and said spacer.

8. (Previously presented) An apparatus as defined in claim 1 wherein said fastener includes a first part spherical surface engageable with a part spherical surface of said housing.

9. (Original) An apparatus as defined in claim 8 wherein said fastener includes a second part spherical surface engageable with said spacer.

10. (Original) An apparatus as defined in claim 9 wherein said fastener includes a surface engageable with said spacer to limit relative movement between said fastener and said housing.

11. (Original) An apparatus as defined in claim 10 wherein said second part spherical surface has a diameter smaller than a diameter of said first part spherical surface, said

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surface engageable with said spacer to limit relative movement between said fastener and said housing extending between said first and second part spherical surfaces.

12. (Original) An apparatus as defined in claim 1 wherein said spacer has an opening through which a tool extends to engage said fastener when said longitudinal member is disengaged from said spacer.

13. (Original) An apparatus as defined in claim 1 wherein said spacer includes slots that receive a tool for inserting said spacer into said housing.

14. (Currently Amended) An apparatus as defined in claim 1 further comprising a longitudinal member and a clamping mechanism, and wherein said clamping mechanism includes a threaded member threadably engageable with said housing.

15. (Original) An apparatus as defined in claim 14 wherein said threaded member engages said longitudinal member to clamp said longitudinal member against said spacer.

16. (Original) An apparatus as defined in claim 14 wherein said threaded member and said housing have a buttress thread.

17. (Currently Amended) An apparatus for connecting a longitudinal member with a bone portion, comprising:

a longitudinal member connectable with a bone portion;
a fastener having a longitudinal axis and engageable with the bone portion
to connect said longitudinal member to the bone portion;

a housing having a first passage configured to receive said longitudinal member, said housing having a second passage with a longitudinal axis extending transverse to said first passage, said fastener extending through an opening in said housing into said second passage and being movable relative to said housing, said longitudinal axis of said fastener being positionable in any one of a plurality of desired angular positions relative to said longitudinal axis of said second passage,
the second passage having a horizontal retention structure;

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a spring member that applies an axial force preventing relative movement between said fastener and said housing and holding said longitudinal axis of said fastener in any one of said plurality of desired angular positions relative to said longitudinal axis of said second passage, said fastener and said housing being manually movable relative to each other against said force when said spring member applies said force; and

a structure having a relaxed state and a compressed state and engaging both the horizontal retention structure of the housing and the spring member to provide said axial force; said structure being in the compressed state when engaging the housing and the spring member.

~~a clamping mechanism that clamps said longitudinal member and said housing to said fastener to prevent movement of said fastener relative to said housing.~~

18. (Currently Amended) An apparatus as defined in claim 1-17 wherein said spring member and said structure are separate members. member applies said axial force to said spacer to prevent said fastener and said housing from moving relative to each other.

19. (Currently Amended) An apparatus as defined in claim 1-17 wherein said member structure engages an indentation radially extending surface on said housing and a radially extending surface on said spacer spring member.

20. (Currently Amended) An apparatus as defined in claim 19 wherein said indentation comprises a radially extending surface and wherein said radially extending surface on said housing at least partially defines a circumferential groove in said housing, said spring member comprises a radially extending surface on said spacer at least partially defining a circumferential groove in said spacer.

21. (Currently Amended) An apparatus as defined in claim 20 wherein said spacer includes first and second radially extending surfaces and an axially extending surface defining said a groove in said spacer.

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22. (Previously presented) An apparatus as defined in claim 4 wherein said spacer includes first and second radially extending surfaces and an axially extending surface defining said groove in said spacer.

23. (Currently Amended) An apparatus as defined in claim 17 20 wherein said spring member applies said axial force to said spacer to prevent said fastener and said housing from moving relative to each other.

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Canceled)

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40. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Canceled)

44. (Canceled)

45. (Canceled)

46. (Canceled)

47. (Currently Amended) An apparatus for connecting a longitudinal member with a bone portion comprising:

a longitudinal member connectable with a bone portion;

a fastener having a longitudinal axis and engageable with the bone portion to connect said longitudinal member to the bone portion;

a housing having a first passage configured to receive said longitudinal member, said housing having a second passage with a longitudinal axis extending transverse to said first passage, said fastener extending through an opening in said housing into said second passage, said housing being movable relative to said fastener, said longitudinal axis of said second passage being positionable in any one of a plurality of desired angular positions relative to said longitudinal axis of said fastener, the second passage having a horizontal indentation;

a spacer received in said second passage of said housing and engageable with said fastener and said longitudinal member, the spacer being positioned below said horizontal indentation;

a member that applies engaging both the horizontal indentation and the spacer to apply an axial force holding said longitudinal axis of said second passage of said housing in any one of said plurality of desired angular positions relative to said longitudinal axis of said fastener when said longitudinal member is

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disengaged from said spacer and said spacer engages said fastener, said fastener and said housing being manually movable relative to each other against said force when said longitudinal member is disengaged from said spacer and said member applies said force; and

~~a clamping mechanism that clamps said longitudinal member, said spacer and said housing to said fastener to prevent movement of said housing relative to said fastener.~~

48. (Allowed) An apparatus comprising:

a longitudinal member connectable with a bone portion;

a fastener having a longitudinal axis and engageable with the bone portion to connect said longitudinal member to the bone portion;

a housing having a first passage configured to receive said longitudinal member, said housing having a second passage with a longitudinal axis extending transverse to said first passage, said fastener extending through an opening in said housing into said second passage and being movable relative to said housing, said longitudinal axis of said fastener being positionable in any one of a plurality of angular positions relative to said longitudinal axis of said second passage;

a spacer received in said second passage of said housing and engageable with said fastener and said longitudinal member;

a member that applies a force to prevent relative movement between said fastener and said housing when said longitudinal member is disengaged from said spacer and said spacer engages said fastener, said fastener and said housing being manually movable relative to each other against said force when said longitudinal member is disengaged from said spacer and said member applies said force; and

~~a clamping mechanism that clamps said longitudinal member, said spacer and said housing to said fastener to prevent movement of said fastener relative to said housing;~~

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said member being a spring member engaging said housing and said spacer, said member including a ring member extending into a groove in said spacer and a groove in said housing; said ring member having a gap to permit radial contraction and radial expansion of said ring member;

said spacer including axially extending slots that receive a tool for inserting said spacer and said ring member into said housing, said slots intersecting said groove in said spacer to permit engagement of said tool with said spring member to radially contract said spring member into said groove in said spacer.

49. (Currently amended) An apparatus comprising:

a longitudinal member connectable with a bone portion;

a fastener having a longitudinal axis and engageable with the bone portion to connect said longitudinal member to the bone portion;

a housing having a first passage configured to receive said longitudinal member, said housing having a second passage with a longitudinal axis extending transverse to said first passage, said fastener extending through an opening in said housing into said second passage and being movable relative to said housing, said longitudinal axis of said fastener being positionable in any one of a plurality of angular positions relative to said longitudinal axis of said second passage;

a spacer received in said second passage of said housing and engageable with said fastener and said longitudinal member;

a member including means for applying a force to prevent relative movement between said fastener and said housing when said longitudinal member is disengaged from said spacer and said spacer engages said fastener, said member including means for permitting manual movement of said fastener and said housing relative to each other against said force when said longitudinal member is disengaged from said spacer and said force is applied; and

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a clamping mechanism that clamps said longitudinal member, said spacer and said housing to said fastener to prevent movement of said fastener relative to said housing;

said member being a spring member engaging said housing and said spacer, said member including a ring member extending into a groove in said spacer and a groove in said housing, said ring member having a gap to permit radial contraction and radial expansion of said ring member;

said spacer including axially extending slots that receive a tool for inserting said spacer and said ring member into said housing, said slots intersecting said groove in said spacer to permit engagement of said tool with said spring member to radially contract said spring member into said groove in said spacer. ~~An apparatus as set forth in claim 1 wherein said housing and said fastener are universally pivotable relative to each other.~~

50. (Canceled)

51. (Canceled)

52. (Canceled)

53. (Canceled)

54. (Canceled)

55. (Canceled)

56. (Canceled)

57. (Canceled)

58. (Canceled)

59. (Canceled)